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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,933	01/30/2001	Rosalynn D. Gill-Garrison	620-130	9089

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EXAMINER	
CLOW, LORI A	

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/771,933	GILL-GARRISON ET AL.	
	Examiner	Art Unit	
	Lori A. Clow, Ph.D.	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) See below
25 OCT. 2001; 24 Jan. 2002; 23 APR. 2003; 14 MAY 2003; 5 NOV. 2003; 29 DEC. 2003
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicant's election with traverse of genes that encode enzymes responsible for detoxification of xenobiotics in phase I metabolism (Species A) and glutathione-S-transferase (Species B) in the paper mailed 21 November 2003 is acknowledged. The traversal is on the ground(s) that the Examiner has mischaracterized the present invention as relating to "genes". Applicant asserts that claim 1, from which all claims depend, relates to a computer-assisted method of providing a "personalized lifestyle advice plan". Applicant further states that the claimed computer-assisted method relates to processing data relating to alleles of an individual and relating that data to information about those alleles in order to produce a personalized lifestyle advice plan. Applicant says that the Examiner's Species Election A requirement appears to be based on the Applicant's recitation of dependent claim 6, without consideration of the subject matter of the claimed invention and that the Species Election B is inconsistent with Species Election A requirement. This is not found persuasive because the Examiner considers the Species Election of claims 6 and 7 an election of a first allele and the Species Election of B of claim 8 and 9 a separate election of a second allele. Applicant seems to say that Species B is somehow linked to Species A and therefore claims different species are related. However, the members of Species A appear to be different form those of Species B. The Examiner maintains that these are two distinct species. If Applicant intends Species B to be a subset of Species A then applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-12 are currently pending.

Claim Objections

Claim 2 is redundant for reciting "the method according to the method". Appropriate correction is requested.

Information Disclosure Statement

The Information Disclosure Statements filed 25 October 2001, 24 January 2002, 23 April 2003, 14 May 2003, 5 November 2003, and 29 December 2003 have been entered and considered. An initialed copy of the forms PTO-1449 is enclosed with this action.

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. See, for example, page 20, line 33.

Claim Rejections - 35 USC § 112

First Paragraph Rejection:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specific known alleles that are correlated with lifestyle risks, does not reasonably provide enablement for any allele known to exist. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

In *In re Wands* (8 USPQ2d 1400 (CAFC 1988)) the CAFC considered the issue of enablement in molecular biology. The CAFC summarized eight factors to be considered in a determination of "undue experimentation". These factors include: (a) the quantity of experimentation necessary; (b) the amount of direction or guidance presented; (c) the presence or absence of working examples; (d) the nature of the invention; (e) the state of the prior art; (f) the relative skill of those in the art; (g) the predictability of the art; and (h) the breadth of the claims.

In considering the factors for the instant claims:

a) In order to practice the claimed invention one of skill in the art must be able to provide a personal lifestyle advice plan for a human subject comprising providing a dataset with information correlating the presence of individual alleles at a genetic loci with a lifestyle risk factor, provide a second dataset comprising information matching a risk factor with at least one lifestyle recommendation, input a third dataset identifying alleles at one or more loci, determine risk factors with said alleles, determine a lifestyle recommendation based on each risk factor from second dataset, and generate a lifestyle advice plan based on the recommendation. For the reasons discussed below, this constitutes undue experimentation.

b) and c) The specification provides examples for selection of **specific** alleles from genetic loci, including genes that encode enzymes responsible for detoxification of xenobiotics in Phase I metabolism (page 14, line 17; page 17, beginning line 23).

d) The invention is drawn to a personalized lifestyle advice plan.

e) It would have been well known in the art that polymorphisms of xenobiotic-metabolizing enzymes and the other **specific** alleles disclosed in the specification could be linked with various risk factors. For instance, in the case of xenobiotic metabolizing enzymes, like cytochrome p450 enzymes, have specificities for various classes of carcinogens and that polymorphisms have been identified for many of them (see Hirvonen. Environmental Health Perspectives. 1999, Volume 107, pages 37-47; PTO Form 1449). However, the claims 1-5, 10, and 11 provide no such **specific** groupings of alleles for the claimed datasets. Certainly not all of alleles known to exist correlate with lifestyle risk factors. Would the instant invention work with any known dataset of alleles? Furthermore, how are correlations made between certain alleles and a life style advice? How are the risk factors determined? What is an appropriate lifestyle recommendation? One of ordinary skill in the art would not know how to give an appropriate lifestyle recommendation for all possible alleles known in the humane genome based upon the teachings of the instant specification. This constitutes undue experimentation.

f) The skill of those in the art of molecular biology and bioinformatics is high.

g) The prior art indicates that certain known alleles correlate with the presence of lifestyle risks.

h) The claims are broad because they are drawn to providing a lifestyle advice plan after assessment of any allele known to exist.

The skilled practitioner would first turn to the instant specification for guidance to practice methods of providing such information. However, the instant specification does not provide specific guidance to practice these embodiments. As such, the skilled practitioner would turn to the prior art for such guidance, however, the prior art shows that only certain alleles have been shown to correlate with disease and life style risk. Finally, said practitioner would turn to trial and error experimentation to determine whether all known alleles correlate to life style risks. Such represents undue experimentation.

Second Paragraph Rejections

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, " determining at least one appropriate lifestyle recommendation (step v)". It is unclear what is meant by an "appropriate" recommendation. What constitutes "appropriate"? Does this mean that the recommendation is "appropriate" based upon the particular risk associated with that allele? For example, if the allele were associated with lung cancer would the "appropriate" advice be to stop smoking? Clarification is requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,559 (Brown; PTO Form 1449), in view of Perera et al. (Carcinogenesis (2000) Volume 21, pages 517-524; PTO Form 1449).

The present invention is drawn to a computer assisted method of providing a personalized lifestyle advice plan comprising providing datasets, identifying alleles, determining risk factors, determining lifestyle recommendations, and generating a lifestyle plan.

Brown teaches a computer system and method for interpreting a patient's gene sequence and his or her environment and lifestyle to come up with a personalized prognosis. The system consists of a health monitor which can read a patient's gene sequence (a dataset of genetic information) and scripts which correspond to information relevant to a disease associated with the gene sequence. A secondary script can be generated, allowing for a dynamic between genes and disease. The end result is a determination of the condition or phenotype associated with the patient's genotype or gene sequence. These events can be repeated over a series of time (column 2, lines 38-63) (claims 1, 3, 4).

Brown does not specifically teach particular alleles associated with disease, however Perera et al. do propose a framework for implementing various biomarkers for assessment of individual risk factors (see abstract).

Specifically, Perera et al. show that common genetic traits, such as those that regulate metabolism and detoxification of carcinogens can have a major impact on the population attributable risk of cancer. For example, cytochrome P450 phase I enzymes can produce highly reactive DNA-damaging intermediates during the normal process of converting chemical carcinogens to excretable forms (claims 6, 7, 10, 11, 12). Polymorphic variations in P450s have been shown to be associated with increase cancer risk in various populations. Furthermore, interindividual variation in phase II detoxifying enzymes, such as glutatione-S-transferase, can also contribute to individual susceptibility (page 520, column 1, lines 19-34) (claims 8 and 9). Perera et al. further disclose that study designs have become increasingly complex and multiple markers are frequently assessed (page 520, column 2, lines 44-56).

Perera et al. also disclose that individuals who have a methyl-deficient diet are at higher risk of colon cancer if they carry a defective polymorphic form of the enzyme methylene tetrahydrofolate reductase (page 521, lines 28-32) (claim 2.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use the system of Brown with the polymorphic marker information of Perera et al. to provide lifestyle advice plan based upon risk factors. One would have been motivated to combine the various markers in the assessment of a patient's predisposition to disease as suggested by Perera et al. at page 521, lines 50-63:

"A recent trend that brings together cancer researchers interested in cancer epidemiology, chemoprevention, and therapy is the increasing recognition that biomarkers developed in the field of molecular epidemiology may also be useful as early or intermediate endpoints in studies on cancer prevention by identifying 'at risk' populations and then assessing the efficacy of various types of intervention. For example, in interventions to prevent first or second malignancies, biomarkers can help identify populations or individuals at high risk of cancer resulting from specific environment-gene interactions".

No claims are allowed.

Inquiries

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and

1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242, or (703) 308-4028.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lori A. Clow, Ph.D., whose telephone number is (571) 272-0715. The examiner can normally be reached on Monday-Friday from 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Woodward, Ph.D., can be reached on (571) 272-0722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Legal Instrument Examiner, Tina Plunkett, whose telephone number is (703) 305-3524, or to the Technical Center receptionist whose telephone number is (571) 272-0549.

Marjorie A. Moran

MARJORIE MORAN
PATENT EXAMINER

February 16, 2004

Lori A. Clow, Ph.D.
Art Unit 1631

Lori A. Clow